Amendments to the Claims

The following listing of claims replaces all prior versions of the claims and all prior listings of the claims in the present application.

Claims 1-23 (Canceled)

Claim 24. (Currently amended) An apparatus for manufacturing a reinforcing structure for tyres of vehicles, comprising:

a feeding device for feeding a plurality of strip segments, each strip segment comprising substantially parallel filiform elements at least partially coated by at least one layer of elastomeric material;

a laying unit for ~~contacting~~ applying the plurality of strip segments to a toroidal support according to a preset laying angle relative to a circumference of the toroidal support, the laying unit including a presser element configured to translate between a first position and a second position across a portion of a strip segment during application of the strip segment on the toroidal support;

a first angular actuation device to cause a relative motion between the laying unit and the toroidal support about a geometric axis of the toroidal support; and

a second angular actuation device configured to generate relative rotation between one of the plurality of strip segments and the toroidal support, during contacting of said one of the plurality of strip segments, the relative rotation being about an axis of correction substantially radial to the geometric axis of rotation of the toroidal support~~; and~~,

~~a control unit coupled to the second actuation device, the control unit being configured to calculate an~~ wherein an amount of said relative rotation is calculated based on a geometry of the toroidal support.

Claim 25. (Previously presented) The apparatus of claim 24, wherein the second angular actuation device is operatively interpolated with the laying unit to cause the plurality of strip segments to be applied according to a substantially orthodromic trajectory relative to the exterior surface of the toroidal support.

Claim 26. (Previously presented) The apparatus of claim 24, wherein the second angular actuation device is mechanically connected to the toroidal support to rotate the toroidal support angularly about the axis of correction.

Claim 27. (Previously presented) The apparatus of claim 24, wherein the axis of correction lies substantially in an equatorial plane of the toroidal support.

Claim 28. (Previously presented) The apparatus of claim 24, wherein the feeding device comprises:

a cutting device operating on a continuous strip element to obtain the plurality of strip segments therefrom; and a gripping device movable between a first operative position, wherein the gripping device engages a terminal end of the continuous strip element in proximity to the cutting device, and a second operative position, wherein the gripping device is removed from the cutting device to extend the continuous strip element beyond the cutting device a distance corresponding to a length of at least one of the plurality of strip segments.

Claim 29. (Previously presented) The apparatus of claim 24, wherein the ~~laying unit comprises at least one~~ presser element is movable against the exterior surface of the toroidal support to cause the applying of the strip segments.

Claim 30. (Currently amended) The apparatus of claim 29, wherein the presser element is a first one and the laying unit comprises:

a second presser element;

at least two support elements respectively supporting said first presser element and second presser element~~presser elements supported by respective support elements~~;

a guide structure bearing the support elements;

a radial actuation device for translating the at least two presser elements in radial movement to the exterior surface of the toroidal support; and

a transverse actuation device for translating the at least two presser elements between a first operative condition, wherein the at least two presser elements are moved together, and a second operative condition, wherein the at least two presser elements are removed relative to an equatorial plane of the toroidal support.

Claim 31. (Previously presented) The apparatus of claim 30, further comprising auxiliary holding elements for holding the strip segments cut off by a cutting device.

Claim 32. (Previously presented) The apparatus of claim 31, wherein the auxiliary holding elements are movable relative to the~~ at least two~~ first presser element~~s~~ and the second presser element in a direction substantially radial to the toroidal support.

Claim 33. (Currently amended) An apparatus for manufacturing a reinforcing structure for tyres of vehicles, comprising:

a feeding device for feeding a plurality of strip segments, each strip segment comprising substantially parallel filiform elements at least partially coated by at least one layer of elastomeric material;

a laying unit for ~~contacting~~ applying the plurality of strip segments to a toroidal support according to a preset laying angle relative to a circumference of the toroidal support, the laying unit including a presser element configured to translate between a first position and a second position across a portion of a strip segment during application of the strip segment on the toroidal support;

a first angular actuation device to cause a relative motion between the laying unit and the toroidal support about a geometric axis of the toroidal support; and a second angular actuation device configured to generate relative angular rotation between one of the plurality of strip segments and the toroidal support~~, during contacting of one of the plurality of strip segments~~ after a central portion of said one of the plurality of strip segments has been brought in contact against the toroidal support, the relative angular rotation being about an axis of correction substantially radial to the geometric axis of rotation of the toroidal support~~; and~~

~~a control unit coupled to the second actuation device, the control unit being configured to calculate an amount of said relative angular rotation occurring between the toroidal support and each strip segment after a central portion of each strip segment has been brought in contact against the toroidal support~~.

Claim 34. (Previously presented) The apparatus of claim 33, wherein the second angular actuation device is operatively interpolated with the laying unit to cause the plurality of strip segments to be applied according to a substantially orthodromic trajectory relative to the exterior surface of the toroidal support.

Claim 35. (Previously presented) The apparatus of claim 33, wherein the second angular actuation device is mechanically connected to the toroidal support to rotate the toroidal support angularly about the axis of correction.

Claim 36. (Previously presented) The apparatus of claim 33, wherein the axis of correction lies substantially in an equatorial plane of the toroidal support.

Claim 37. (Previously presented) The apparatus of claim 33, wherein the feeding device comprises:

a cutting device operating on a continuous strip element to obtain the plurality of strip segments therefrom; and

a gripping device movable between a first operative position, wherein the gripping device engages a terminal end of the continuous strip element in proximity to the cutting device, and a second operative position, wherein the gripping device is removed from the cutting device to extend the continuous strip element beyond the cutting device a distance corresponding to a length of at least one of the plurality of strip segments.

Claim 38. (Previously presented) The apparatus of claim 33, wherein the ~~laying unit comprises at least one~~ presser element is movable against the exterior surface of the toroidal support to cause the applying of the strip segments.

Claim 39. (Currently amended) The apparatus of claim 38, wherein the presser element is a first presser element and the laying unit further comprises:

a second presser element;

at least two support elements respectively supporting said first presser element and said second presser element ~~presser elements supported by respective support elements~~;

~~a guide structure bearing the support elements;~~

a radial actuation device for translating the ~~at least two~~ first presser element~~s~~ and the second presser element in radial movement to the exterior surface of the toroidal support; and

a transverse actuation device for translating the ~~at least two~~ first presser element~~s~~ and the second presser element between a first operative condition, wherein the ~~at least two~~ first presser element~~s~~ and the second presser element are moved together, and a second operative condition, wherein the ~~at least two~~ first presser element~~s~~ and the second presser element are removed relative to an equatorial plane of the toroidal support.

Claim 40. (Previously presented) The apparatus of claim 39, further comprising auxiliary holding elements for holding the strip segments cut off by a cutting device.

Claim 41. (Previously presented) The apparatus of claim 40, wherein the auxiliary holding elements are movable relative to the ~~at least two~~ first presser element~~s~~ and the second presser element in a direction substantially radial to the toroidal support.

Claim 42. (New) An apparatus for manufacturing a reinforcing structure for tyres of vehicles, comprising:

a feeding device for feeding a plurality of strip segments, each strip segment comprising substantially parallel filiform elements at least partially coated by at least one layer of elastomeric material;

a laying unit for applying the plurality of strip segments to a toroidal support according to a present laying angle relative to a circumference of the toroidal support;

a first angular actuation device to a cause a relative motion between the laying unit and the toroidal support about a geometric axis of the toroidal support; and

a second angular actuation device configured to generate relative rotation between one of the plurality of strip segments and the toroidal support, during contacting of said one of the plurality of strip segments, the relative rotation being about an axis of correction substantially radial to the geometric axis of rotation of the toroidal support;

wherein an amount of said relative rotation is calculated based on a geometry of the toroidal support; and

wherein the second angular actuation device is mechanically connected to the toroidal support to rotate the toroidal support angularly about the axis of correction.

Claim 43. (New) The apparatus of claim 42, wherein the second angular actuation device is operatively interpolated with the laying unit to cause the plurality of strip segments to be applied according to a substantially orthodromic trajectory relative to the exterior surface of the toroidal support.

Claim 44. (New) The apparatus of claim 42, wherein the axis of correction lies substantially in an equatorial plane of the toroidal support.

Claim 45. (New) The apparatus of claim 42, wherein the feeding device comprises:

a cutting device operating on a continuous strip element to obtain the plurality of strip segments therefrom; and

a gripping device movable between a first operative position, wherein the gripping device engages a terminal end of the continuous strip element in proximity to the cutting device, and a second operative position, wherein the gripping device is removed from the cutting device to extend the continuous strip element beyond the cutting device a distance corresponding to a length of at least one of the plurality of strip segments.

Claim 46. (New) The apparatus of claim 42, wherein the presser element is movable against the exterior surface of the toroidal support to cause the applying of the strip segments.

Claim 47. (New) The apparatus of claim 46, wherein the presser element is a first presser element and the laying unit further comprises:

a second presser element;

at least two support elements respectively supporting said first presser element and said second presser element;

a guide structure bearing the support elements;

a radial actuation device for translating the first presser element and the second presser element in radial movement to the exterior surface of the toroidal support; and

a transverse actuation device for translating the first presser element and the second presser element between a first operative condition, wherein the first presser element and the second presser element are moved together, and a second operative condition, wherein the first presser element and the second presser element are removed relative to an equatorial plane of the toroidal support.

Claim 48. (New) The apparatus of claim 47, further comprising auxiliary holding elements for holding the strip segments cut off by a cutting device.

Claim 49. (New) The apparatus of claim 48, wherein the auxiliary holding elements are movable relative to the first presser element and the second presser element in a direction substantially radial to the toroidal support.

50. (New) An apparatus for manufacturing a reinforcing structure for tyres of vehicles, comprising:

a feeding device for feeding a plurality of strip segments, each strip segment comprising substantially parallel filiform elements at least partially coated by at least one layer of elastomeric material;

a laying unit for applying the plurality of strip segments to a toroidal support according to a present laying angle relative to a circumference of the toroidal support;

a first angular actuation device to cause a relative motion between the laying unit and the toroidal support about a geometric axis of the toroidal support; and

a second angular actuation device configured to generate relative rotation between one of the plurality of strip segments and the toroidal support after a central portion of said one of the plurality of strip segments has been brought in contact against the toroidal support, the relative angular rotation being about an axis of correction substantially radial to the geometric axis of rotation of the toroidal support,

wherein the second angular actuation device is mechanically connected to the toroidal support to rotate the toroidal support angularly about the axis of correction.

Claim 51. (New) The apparatus of claim 50, wherein the second angular actuation device is operatively interpolated with the laying unit to cause the plurality of strip segments to be applied according to a substantially orthodromic trajectory relative to the exterior surface of the toroidal support.

Claim 52. (New) The apparatus of claim 50, wherein the axis of correction lies substantially in an equatorial plane of the toroidal support.

Claim 53. (New) The apparatus of claim 50, wherein the feeding device comprises:

a cutting device operating on a continuous strip element to obtain the plurality of strip segments therefrom; and

a gripping device movable between a first operative position, wherein the gripping device engages a terminal end of the continuous strip element in proximity to the cutting device, and a second operative position, wherein the gripping device is removed from the cutting device to extend the continuous strip element beyond the cutting device a distance corresponding to a length of at least one of the plurality of strip segments.

Claim 54. (New) The apparatus of claim 50, wherein the presser element is movable against the exterior surface of the toroidal support to cause the applying of the strip segments.

Claim 55. (New) The apparatus of claim 54, wherein the presser element is a first presser element and the laying unit further comprises:

a second presser element;

at least two support elements respectively supporting said first presser element and second presser element;

a radial actuation device for translating the first presser element and the second presser element in radial movement to the exterior surface of the toroidal support; and a transverse actuation device for translating the first presser element and the second presser element between a first operative condition, wherein the first presser element and the second presser element are moved together, and a second operative condition, wherein the first presser element and the second presser element are removed relative to an equatorial plane of the toroidal support.

Claim 56. (New) The apparatus of claim 55, further comprising auxiliary holding elements for holding the strip segments cut off by a cutting device.

Claim 57. (New) The apparatus of claim 56, wherein the auxiliary holding elements are movable relative to the first presser element and the second presser element in a direction substantially radial to the toroidal support.